Jurnal Ners

Volume 19 Issue 4, Nov 2024, p. 500-508
http://dx.doi.org/10.20473/jn.v19i4.57686

ORIGINAL ARTICLE OPEN ACCESS

Parental support and influencing factors for school-age children's healthy movement behavior: a cross-sectional study

Praba Diyan Rachmawati[1]*, Ilya Krisnana[1], Retnayu Pradanie[1], Nuzul Qur'aniati[1], Yuni Sufyanti Arief[1], Mustika Milenia Dwi Tunjung Biru[2], Meirina Nur Asih[1], Pratuma Rithpho[3], and Iqlima Dwi Kurnia[1]

[1] Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

[2] Hermina Madiun Hospital, Madiun, Indonesia

[3] Faculty of Nursing, Naresuan University, Phitsanulok, Thailand

*Correspondence: Praba Diyan Rachmawati. Address: Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia Email: praba-d-r@fkp.unair.ac.id

Responsible Editor: Ferry Efendi

Received: 17 May 2024○ Revised: 26 October 2024 ○ Accepted: 20 November 2024

ABSTRACT

Introduction: Optimizing healthy lifestyles in children requires parental support for healthy movement behaviors. This study analyzed factors influencing parental support for school-age children's movement activities.

Methods: This study employed an analytic descriptive design with a cross-sectional approach, involving a sample of 355 mothers with school-age children. The independent variables included family, child, and environmental factors, whereas the dependent variable was parental support for healthy movement behaviors, as assessed through a questionnaire. Data analysis was performed using binary logistic regression with backward elimination.

Results: The factors that significantly influenced parental support for their children's engagement in light physical activities included the children's own level of participation in such activities (OR=2.52, 95% CI=0.76-6.67). Factors affecting support for moderate to vigorous activities were maternal exercise habits (OR=3.37; 95% CI=1.18-9.65), children's sports habits (OR=5.18; 95% CI=1.64-16.26), and the presence of personal gadgets (OR=0.45, 95% CI=0.23-0.86). Parental support for preventing sedentary behaviors was influenced by parental knowledge (OR=2.33; 95% CI=1.34-4.05), mother's sleep duration (OR=2.46; 95% CI=1.27-4.75), and gadgets (OR=0.55; 95% CI=0.31-0.95). Factors affecting support for adequate sleep included children's light activities (OR=3.42; 95% CI=1.27-9.23) and their ownership of personal gadgets (OR=0.44; 95% CI=0.24-0.79)

Conclusions: Parental support is influenced by the knowledge and physical activity habits of both mother and child, as well as gadget use and maternal sleep patterns. Pediatric nurses can enhance this support through health education focused on promoting healthy movement behaviors within families.

Keywords: healty lifestyle, healthy movement behaviors, parental support, school-age children

Introduction

The digital era and the COVID-19 pandemic have brought about significant changes in children and adolescents. For instance, many of them have sedentary lifestyles owing to technological advancements that have made all activities simple, instant, and practical. The COVID-19 pandemic has also contributed to alterations in the movement patterns of children. Consequently, school-aged children no longer have the opportunity to engage in physical activity at school, play outside the home, exercise, or participate in school activities (Bates *et al.*, 2020; Guan *et al.*, 2020). In the post-pandemic period, this circumstance also affected

the everyday activity patterns of school-aged children. A decrease in physical activity, an increase in sedentary behavior, and insufficient sleep length are current issues among school-aged children (Bates *et al.*, 2020; Margaritis *et al.*, 2020)

The World Health Organization (WHO) has issued guidelines for physical activity, sedentary behavior, and adequate sleep duration in children (WHO, 2019). According to these guidelines, children aged 5 to 17 years should engage in at least 60 minutes of physical activity per day, spend no more than two hours in front of a screen, and sleep for 9 to 11 hours per night (Guan *et al.*, 2020). In reality, school-age children have a difficult time implementing it, and their physical activity has decreased drastically compared to before the pandemic (López-Bueno *et al.*, 2021). The study stated that the average physical activity of children is currently 1.29 hours per week, with an increase in screen time of almost 5 hours per day (Pietrobelli *et al.*, 2020). If people closest to the child are unable to regulate the child's activities properly, it is risky to cause adverse effects on children's health. In recent years, the prevalence of childhood obesity has dramatically increased (Ministry of Health, 2018).

In Indonesia, people hold false beliefs regarding the nutritional status of children; many parents believe that obese children are healthy (Yuarnistira *et al.*, 2019); parents tend to believe that physical activity and sedentary behavior are unimportant behaviors (Ulfiana, Rachmawati and Fadhilah, 2019), According to the 2018 Basic Health Research data in Indonesia, 20% of school-age children are overweight and obese (Ministry of Health, 2018). In addition, cases of type 2 diabetes mellitus in children have increased 70 times in 2023 due to changes in lifestyle, including nutritional problems and physical activity (Ministry of Health, 2023); however, if the pattern of parental regulation of children's movement activities is not appropriate, it can lead to long-term health problems in children. If parental support for adequate movement behavior in school-aged children is not ideal, it becomes challenging to reverse the decline in physical activity, increase sedentary behavior, and reduce sleep duration; this situation will increase the risk of obesity in children. This study focused on factors based on the framework of the Family Ecological Model (FEM), which explains family factors that can influence parenting patterns to adopt a healthy lifestyle, consisting of family characteristics, children, and the child's living environment (Davison, Jurkowski and Lawson, 2013). Parental support and factors that influence appropriate movement behavior, including physical activity, sedentary behavior, and sleep needs, according to the characteristics in Indonesia have rarely been studied. Therefore, this study aimed to analyze the determinant factors that influence parental support in the healthy movement behavior of school-aged children using a family based approach.

Materials and Methods

Design

This study employed a descriptive analytical design and a cross-sectional approach. This study was conducted between June and August 2021. The respondents in this study were mothers of school-aged children aged 9–12 years in Surabaya, East Java, and were able to access the online questionnaires.

Sample

The inclusion criteria for this study required participants to be mothers of school-aged children who provided daily care and possessed the ability to use smartphones. The sample size was calculated using Slovin's formula, resulting in 355 respondents. This study employed a multistage random sampling technique that targeted elementary schools across various districts. The researcher randomly selected four districts within the city, and subsequently one elementary school was randomly chosen from each district to serve as the research site. From the selected schools, mothers were sampled proportionately to participate as respondents. The researcher collaborated with the schools to distribute an online questionnaire to the chosen participants.

Measurement tools

The independent variables were mother and family factors, including mother's age, mother's education, mother's occupation, mother's knowledge, number of children, family type, family income, mother's movement behavior characteristics, and child characteristics and characteristics of the child's environment. The dependent variable was parental support for children's healthy movement behavior.

Data were collected using questionnaires. Categorization of mothers' age was based on early adulthood (20-40 years), middle adulthood (41-60 years), and older adults (>60 years), and categorization of family income based on average minimum wage. A questionnaire to measure mothers' knowledge of healthy movement behavior was constructed by the researcher based on Bates *et al.*(2020). It consists of

eight multiple-choice questions, where each correct answer scored 1 point and incorrect answers received no points. The scores were categorized as good, sufficient, or poor. Mother's movement behavior

Table 1. The characteristics of Children, Their Mothers and Families (n=355)

Characteristics	f	%
Mothers and Families Characteristics:		
Mother's Age		
20-40 years old	238	67.0
41-60 years old	115	32.4
>60 years old	2	0.6
Mother's Education		
Junior High School	62	17.5
Senior High School	140	39.4
College	153	43.1
Mother's Occupation		
Employee	95	26.8
Enterpreneur	29	8.2
Housewife	231	65
Mother's knowledge		
Poor	113	31.8
Good	242	68.2
Number of children		
1 child	51	14.4
2 children	202	56.9
3 children	74	20.8
4 children	21	5.9
>4 children	7	1.97
Family income		
Low Income	232	65.3
High Income	123	34.6
Family Type		
Nuclear family	271	76.3
Extended Family	74	20.8
Single Parent	10	2.8
Mother's movement behavior characteristics		
Sedentary behavior		
Limit	263	74.1
No Limit	92	25.9
Exercise habits (in the last 2 weeks)		
>3 days a week	22	6.2
2-3 days a week	82	23.1
1 day a week	86	24.2
Never	165	46.5
Sleep Habits (in the last 2 weeks)		
>9 hours in a day	7	2
8-9 hours in a day	79	22.3
6-7 hours in a day	188	53
<6 hours in a day	81	22.8
Child characteristics		
Child gender		
Female	175	49.3
Male	180	50.7
Moderate to vigorous activities		
Never	103	29
1-2 days a week	160	45.1
3 days a week	41	11.5
>3 days a week	51	14.4
Light physical activities		
Never	21	5.9
1-3 days a week	92	25.9
Every day	242	68.2
Children's sleep habits		
<9 hours in a day	136	38.3
9-11 hours in a day	214	60.3
>9 hours in a day	5	1.4
Have a habit of looking at gadgets before going to bed:		
Not	179	50.4
Yes	176	49.6
Personal gadgets		
Have	184	51.4
Do not have	171	48.2
Characteristics of the Child's Environment		
Availability of television or other electronic items in the child's room		
Available	243	68.5
Not Available	112	31.5
Availability of a safe play area in the home environment		
Available	63	17.7
Not Available	292	82.3

characteristics including sedentary behavior, exercise habits, sleep habits; The characteristics of children refer to those of children aged 9-12 years, If a mother has more than one child within this age range, the oldest child will be selected for assessment. The child characteristics included gender, characteristics of the child's movement behavior (moderate to vigorous physical activity, light physical activity, and sleep duration), and personal gadgets. The questionnaire for children's movement behavior was developed based on WHO (2020) and Guan *et al.* (2020). It includes questions regarding the total time each day the child spent watching TV, using gadgets, and playing games outside. For moderate to vigorous physical activity, respondents were asked how many days in a week their child engaged in such activities for 60 minutes a day, with answer options of Never, 1-2 days a week, 3 days a week, and less than 3 days a week. For light physical activity, the question was how many days in a week the child participated in light activities for a certain number of hours per day, with answer options of Never, 1-3 days a week, or every day. Additionally, the questionnaire asked about the average duration of the child's deep sleep over 24 hours, with response options of < 9 hours per day, 9-11 hours per day, or > 11 hours per day.

The environmental characteristics and instruments include the availability of electronic media, specifically television in the child's bedroom, with answer options of yes or no, as well as safe residential access and play areas, and the ownership of screen media based on Nurwitanti (2019). This is measured by the availability of safe play spaces for children with the following criteria: (1) the presence of a large area or field, (2) the presence of safe and sturdy play equipment, (3) the absence of objects or materials that pose injury risks, (4) supervision by an adult, and (5) a home environment with minimal vehicle traffic. The ownership of screen media consisted of questions about whether the child owned personal gadgets and the habit of playing with gadgets before bedtime, both with answer options of yes or no.

Parental support was assessed using the Parental Support of Children's Movement Behaviors Questionnaire (Rhodes *et al.*, 2019), this questionnaire consists of support for children's physical activity, support for preventing sedentary behavior, and support for meeting children's sleep needs. The questionnaire includes two questions regarding each parameter. The scoring for each question was as follows: never/rarely = 1, 1-2 times per week = 2, 3-4 times per week = 3; almost every day = 4; every day = 5.

The questionnaire was translated into Indonesian and subjected to validity and reliability testing. Each question item demonstrated a calculated r-value exceeding 0.361, indicating validity. Furthermore, the overall reliability of the questionnaires was confirmed, with reliability coefficients of greater than 0.61. Eligible mothers had access to both questions after providing informed consent online. After obtaining consent, the mother completed and submitted both the online questionnaires. The average time required for the responders to complete the questionnaire was 20 min.

Data Analysis

Multivariate analysis was performed with logistic regression tests using binary logistic regression tests with backward elimination procedures ($p < 0.05$) to identify the independent factors that had the greatest impact on the dependent variable.

Ethical considerations

Ethical clearance was granted by the Health Research Ethics Committee of the Faculty of Nursing, Universitas Airlangga (grant number 2285-KEPK). This research strictly implements ethical principles, before filling out the questionnaire the researcher explains the aims and objectives of the research, respondent rights and research procedures. The questionnaires were accessed by eligible mothers after obtaining informed consent, contained in an online form. Once consent was obtained, the mothers completed and submitted both the questionnaires online. The time required for respondents to complete the questionnaires was approximately 20 min.

Results

The characteristics of children, their mothers and families

According to the characteristics of the mothers and families, the results of this study indicate that most families are nuclear families (76.3%, n=271). The majority of the mothers held a college degree (43%, n=153), good knowledge (68.2%, n= 242), were housewives (65%, n=231), between the ages of 20 and 40 years (67%, n=238), most of them having a low income (65.3%, n=232). More than half of the families had two children (56.9%, n=202). Among the mothers, 74.1% reported limiting their sedentary time (n=263), whereas 46.5 percent of these mothers reported never exercising (n=165). More than half of mothers (53 %, n=188) sleep 6-7 hours per day. On the other hand, 50.7 percent (n=180) of the children in this study were boys and engaged in moderate to intense exercise 1-2 days

Table 2. Parental Support Behavior (n=355)

Parental Support Behavior	f	%	Mean	SD
Moderate to vigorous activities				
Not support	301	84.1	1.15	0.359
Support	54	15.1		
Light Activity				
Not support	141	39.4	1.60	0.49
Support	214	59.8		
Good sleep habit				
Not support	71	19.8	1.80	0.40
Support	284	79.3		
Prevent sedentary behavior				
Not support	76	21.2	1.78	0.41
Support	279	77.9		

per week (45.1%, n=120). The majority of them engaged in light activity daily (68.2%, n=242) and slept between 9 and 11 h per day (60.3%, n=214). The environment was mostly available with television or other electronic items in the bedroom, at 68.5% (n=243), while safe play areas, most were not available (82.3%, n=292). The characteristics of Children, their mothers and Families are detailed table 1.

Parental support behavior

Based on parental support behavior, the majority of mothers did not support moderate-to-heavy activities (84%, n=301);, however majority supported light activity 59.8% (n=214), good sleep habits 79.3% (n=284), and prevented sedentary behavior 77.9% (n=279) in their children. Parental support behavior is detailed in table 2.

Multivariate analysis results of factors that influence parental support for school-age children's movement behavior

Table 3 presents the findings from the multivariate analysis conducted in this study. The analysis indicated that the child's individual engagement in light activities was the principal factor influencing parental support for such activities on a weekly basis. Mothers with children

Table 3. Multivariate analysis results of factors that influence parental support for school-age children's movement behavior (n=355)

Variable	B	OR	95% CI		p-value
			Lower	Upper	
Support for children's light activities					
Children's light activity per week					
Never					<0.001
1-3 days per week	-	-	-	-	0.14
Every day	0.81	2.25	0.76	6.67	0.00
	2.04	7.70	2.72	21.84	0.02
Support for moderate to vigorous activities					
Mother's exercise					0.03
Never	-	-	-	-	-
1 day per week	- 0.42	0.65	0.26	1.63	0.36
2-3 days per week	0.49	1.64	0.75	3.55	0.21
>3 days per week	1.21	3.37	1.18	9.65	0.02
Children's sports					0.03
Never	-	-	-	-	-
1 day per week	1.32	3.75	1.34	10.46	0.01
2-3 days per week	1.06	2.89	0.79	10.55	0.10
>3 days per week	1.64	5.18	1.64	16.26	<0.001
Personal gadgets					
Do not have	-	-	-	-	-
Have	- 0.79	0.45	0.23	0.86	0.01
Support preventing sedentary behaviors					
Knowledge					
Poor	-	-	-	-	-
Good	0.85	2.33	1.34	4.05	<0.001
Mother's sleep duration					0.02
<6 hours	-	-	-	-	-
6-7 hours	0.89	2.46	1.27	4.75	0.00
8-9 hours	0.15	1.17	0.56	2.41	0.67
>9 hours	- 0.10	0.89	0.17	4.82	0.89
Personal gadgets					
Do not have	-	-	-	-	-
Have	-0.60	0.55	0.31	0.958	0.03
Support for adequate and regular sleep					
Children's light activities					0.03
Never	-	-	-	-	-
1-3 days	0.73	2.08	0.73	5.96	0.16
Every day	1.23	3.42	1.27	9.23	0.01
Personal gadgets					
Do not have	-	-	-	-	-
Have	-0.83	0.44	0.24	0.79	<0.001

who engaged in light activities one to three days per week were 2.25 times more likely to support light activities than mothers with children who never engaged in light activities per week (OR=2.25, 95% CI= 0.76-6.67). The mother's support for the child's moderate-to-vigorous activity was influenced by the mother's and children's own exercise activities, as well as the children's gadget ownership. Mothers who exercised more than three days per week were 3.37 times more likely to support moderate-to-heavy activities for school-aged children compared to mothers who never exercised in one week (OR= 3.37; 95%CI= 1.18-9.65). Mothers whose children regularly exercised more than three days per week will be 5.18 times more supportive of moderate to vigorous activities, compared to mothers whose children never exercised (OR=5.18; 95% CI= 1.65-16.26), whereas mothers whose children regularly exercised once per week will be 3.75 times more supportive of moderate to vigorous activities than mothers whose children never exercised. Mothers with children who have gadgets will be 0.45 times less likely to support moderate to vigorous activities than mothers with children who do not have personal gadgets (OR=0.45, 95% CI= 0.23-0.86).

Mothers' support for preventing school-aged children's sedentary behavior was influenced by factors such as their knowledge, sleep duration, and gadget ownership. Mothers who have good knowledge were 2.33 times more supportive of appropriate screen time activities, compared to mothers who have sufficient knowledge (0R=2.33; 95% CI= 1.34-4.05). Mothers who have adequate and regular sleep time were 2.46 times more likely to support healthy screen time than mothers who do not have adequate and regular sleep (OR=2.46; 95% CI=1.27-4.75). Mothers with children who have personal gadgets will be 0.55 times less likely to support preventing sedentary activities compared to mothers with children who do not have personal gadgets (OR=0.54; 95% CI= 0.31-0.95).

It was found that children's light activity and ownership of personal gadgets had a relationship with support for adequate and regular sleep. Children's daily light activity had a significant relationship with a p-value of 0.015 ($\alpha<0.05$). Mothers with children who had light activity every day were 3.42 times more likely to support adequate and regular sleep time than children who never did light activity for one week (OR: 3.42; 95% CI: 1.27-9.23). Mothers with children who had personal gadgets were 0.44 times less likely to support adequate and regular sleep activities, compared to mothers with children who did not have personal gadgets (OR: 0.44; 95%CI= 0.24-0.79).

Discussions

Mothers who are active in exercising more than three days a week will be more supportive of their children's moderate-to-vigorous activities. Parental mothers are role models for their children (Coto *et al.*, 2019). According to a study by Neshteruk (Neshteruk *et al.*, 2020), parents who support their children's activities have the highest score in motivating their children to participate in sports and other activities. Additionally, this type of parent can effectively manage how long a child spends focusing on a screen (Kaehler, Jacobs and Jones, 2016). According to Vaughn's study (Vaughn, Hales and Ward, 2013), parental assessment of children's sports activities is also related to children's activities, which can enhance their children's motivation to engage in sports by exemplifying positive sportsmanship, providing opportunities for their children to observe them exercising, encouraging discussions about sports, participating in physical activities together, and fostering enjoyment in these shared experiences. Furthermore, mothers' encouragement, such as verbal praise, practical assistance, family activities, and explicit modelling, can help boost children's desire to be physically active. In a different study, it was also stated that the motivation of parents to engage in physical exercise was linked to the motivation of children to engage in physical activity, as well as the intensity of activity (Lucas *et al.*, 2021). In contrast to mothers who do not engage in physical exercise, this study indicates that some mothers do not support moderate-to-vigorous activities. This may be due to the difficulties faced by mothers who do not exercise while serving as role models and motivating their children to participate in physical activities. Although the majority of mothers in this study were highly educated, factors such as time constraints and the demands of their professional commitments may have contributed to this lack of support (Al Yazeedi *et al.*, 2021).

Good maternal knowledge is more supportive in preventing sedentary behavior in children. Those who are knowledgeable about appropriate screen time limits are more effective in managing their children's engagement in sedentary activities, while others who possess knowledge about healthy lifestyles tend to exhibit healthy habits in their daily lives (Marciano, Petrocchi and Camerini, 2020). This is consistent with our findings, which showed that mothers who obtain

sufficient sleep are more likely to control their children's sedentary activities. Previous research indicates that children's activity levels are influenced by their parents' sleep habits, particularly those of their mothers (Zhang *et al.*, 2010), and sedentary behavior is related to adequate sleep duration (Souza *et al.*, 2022). Children who experience insufficient sleep are often affected by their parents' lack of sleep as parents serve as role models for their children at home. Parental lifestyle significantly impacts daily habits within the family, including both sedentary lifestyles and sleep adequacy (Coto *et al.*, 2019). However, children's personal gadget ownership reduces parental support in preventing sedentary activity. Children of mothers who are permissive to screentime are more sedentary than those of mothers who participate in sports (Neshteruk *et al.*, 2020). Parents who facilitate their children's use of personal devices provide opportunities to engage in activities such as watching videos and playing games (Chang and Lei, 2021). This behavior increases sedentary activity, characterized by prolonged sitting or lying down, and decreases children's movement behavior (Hanifah, Nasrulloh and Sufyan, 2023). Previous research has found that some parents justify facilitating their children's use of gadgets for purposes such as completing school assignments, keeping their children indoors, encouraging them to eat, and other reasons that allow parents to have time for themselves (Koirala *et al.*, 2021).

Mothers with children who engage in light activities every day are more supportive of adequate and regular sleep time than mothers with children who never engage in light activities for one week. In line with previous research, there was a relationship between sleep duration and physical activity in children (Williams *et al.*, 2014). This study indicates that active children who engage in high levels of physical activity throughout the day tend to have shorter sleep durations than their inactive peers. However, further investigation is needed to determine whether reduced sleep duration is correlated with lower sleep quality. These findings align with other studies suggesting that a higher proportion of vigorous physical activity during the day may disrupt sleep patterns (Ekstedt *et al.*, 2013). This is contrary to the phenomenon post the pandemic and the current digital era that brings new habits, where there is a decrease in physical activity accompanied by a decrease in sleep duration (Margaritis *et al.*, 2020), which is related to the use of digital media, which is difficult to let go of. The study findings indicate that personal gadget ownership is related to mothers' support in preventing children's sedentary activities. Children who have personal gadgets tend to have longer screen times than children who do not have personal gadgets (Koirala *et al.*, 2021). A long screen time has an impact on the child's sleep duration, which will decrease and be poor in quality. These results are consistent with the meta-analysis results conducted by Jansen (Janssen *et al.*, 2020) that *screen time* has an adverse relationship with children's sleep patterns. It has been reported that short-range light waves (blue/green light) emitted from the screen suppress pineal melatonin secretion, which can affect the circadian cycle (via supra-chiasmatic nucleus signals) and sleep onset (via the hypothalamic ventrolateral pre-optic nucleus) (Higuchi *et al.*, 2014) (Chang *et al.*, 2014). Children who allocate more time to screens often participate in more social and educational activities. However, excessive and unrestricted screen time can negatively impact cognitive development and disrupt sleep (Lucas *et al.*, 2021); which is also in line with (Hale and Guan, 2015). Screen time, such as gaming and watching videos, negatively affects sleep duration, particularly when screens are viewed shortly before bedtime, and each hour of screen time reduces sleep duration by three minutes (Chang and Lei, 2021).

The limitations of this research include challenges in adjusting the distribution of respondents during the sample recruitment process, which resulted in the predominance of mothers with higher educational levels. Additionally, there was a limitation associated with the use of the backward elimination procedure, as the authors were unable to report all variables that were excluded during the regression process.

Conclusion

Parental support for children's movement behavior is influenced by the characteristics of both mothers and children. Daily light activities performed by children influence maternal support for these activities as well as the adequacy and consistency of the children's sleep patterns. Additionally, children who possess personal gadgets impact parental support for moderate-to-vigorous activities, sedentary behavior, and sleep adequacy and regularity. Another finding of this study indicates that the duration of the mother's sleep affects her support for the child's sedentary activities. Furthermore, both the mother's and child's exercise habits, when practiced more than three days a week, significantly influenced the mother's support for the child's moderate-to-vigorous activities.

Excessive or insufficient physical activity disrupts the balance between the proportion of sleep and children's

daily activities. The implementation of nursing practices related to parental support in the physical activities of children should focus on optimizing parental knowledge, good habits, and their roles as role models. Additionally, more research is needed to expand our understanding of movement behaviors in children and parents in the Asian context.

Acknowledgments

The author would like to express his appreciation and thanks the mothers who were willing to participate in this research. We also thank Universitas Airlangga for providing funding to support this research.

Funding Source

This study and its publication were supported by internal research grants from Universitas Airlangga 2021 (grant number 212/UN3/2021).

Conflict of Interest

The authors declare that we do not have any conflict of interest.

References

Bates, L. C. et al. (2020) 'COVID-19 Impact on Behaviors across the 24-Hour Day in Children and Adolescents: Physical Activity, Sedentary Behavior, and Sleep', Children, 7(9), p. 138. doi: 10.3390/children7090138.

Chang, A. et al. (2014) 'Evening use of light-emitting eReaders negatively affects sleep , circadian timing , and next-morning alertness', pp. 2–7. doi: 10.1073/pnas.1418490112.

Chang, Z. and Lei, W. (2021) 'A Study on the Relationship Between Physical Activity, Sedentary Behavior, and Sleep Duration in Preschool Children', Frontiers in Public Health, 9.

Coto, J. et al. (2019) 'Parents as Role Models: Associations Between Parent and Young Children's Weight, Dietary Intake, and Physical Activity in a Minority Sample', Maternal and Child Health Journal, 23(7), pp. 943–950. doi: 10.1007/s10995-018-02722-z.

Davison, K. K., Jurkowski, J. M. and Lawson, H. A. (2013) 'Reframing family-centred obesity prevention using the Family Ecological Model', Public Health Nutrition, 16(10), pp. 1861–1869. doi: 10.1017/S1368980012004533.

Ekstedt, M. et al. (2013) 'Sleep, physical activity and BMI in six to ten-year-old children measured by accelerometry: a cross-sectional study', International Journal of Behavioral Nutrition and Physical Activity, 10(1), p. 82. doi: 10.1186/1479-5868-10-82.

Elida, Ulfiana and Praba Diyan, Rachmawati and Dyah, K. F. (2019) 'Contributing Factors of the Mother's Behavior in Fulfilling Nutritional Needs for Under-Five Children with Overweight and Obesity', Indian Journal of Public Health Research & Development, 10(8), pp. 2713–2718. doi: 10.5958/0976-5506.2019.02280.0.

Guan, H. et al. (2020) 'Promoting healthy movement behaviours among children during the COVID-19 pandemic', The Lancet Child & Adolescent Health, 4(6), pp. 416–418. doi: 10.1016/S2352-4642(20)30131-0.

Hale, L. and Guan, S. (2015) 'Screen time and sleep among school-aged children and adolescents: A systematic literature review', Sleep Medicine Reviews, 21, pp. 50–58. doi: 10.1016/j.smrv.2014.07.007.

Hanifah, L., Nasrulloh, N. and Sufyan, D. L. (2023) 'Sedentary Behavior and Lack of Physical Activity among Children in Indonesia', Children. doi: 10.3390/children10081283.

Higuchi, S. et al. (2014) 'Influence of Light at Night on Melatonin Suppression in Children', 99(September), pp. 3298–3303. doi: 10.1210/jc.2014-1629.

Janssen, X. et al. (2020) 'Associations of screen time, sedentary time and physical activity with sleep in under 5s: A systematic review and meta-analysis', Sleep Medicine Reviews, 49, p. 101226. doi: 10.1016/j.smrv.2019.101226.

Kaehler, L. A., Jacobs, M. and Jones, D. J. (2016) 'Distilling Common History and Practice Elements to Inform Dissemination: Hanf-Model BPT Programs as an Example', Clinical Child and Family Psychology Review, 19(3), pp. 236–258. doi: 10.1007/s10567-016-0210-5.

Koirala, S. et al. (2021) 'Role of parents on screen time of young children in Pokhara metropolitan, Nepal- a cross sectional study', Journal of Gandaki Medical College-Nepal, 14(1 SE-Original Articles), pp. 8–13. doi: 10.3126/jgmcn.v14i1.34766.

López-Bueno, R. et al. (2021) 'Potential health-related behaviors for pre-school and school-aged children during COVID-19 lockdown: A narrative review', Preventive Medicine, 143. doi: 10.1016/j.ypmed.2020.106349.

Lucas, A. R. et al. (2021) 'The role of motivation on physical activity and screen time behaviors among parent-adolescent dyads: The FLASHE study', Preventive Medicine, 153(November 2020), p. 106725. doi: 10.1016/j.ypmed.2021.106725.

Marciano, L., Petrocchi, S. and Camerini, A.-L. (2020) 'Parental Knowledge of Children's Screen Time: The Role of Parent-Child Relationship and Communication', Communication Research, 49(6), pp. 792–815. doi: 10.1177/0093650220952227.

Margaritis, I. et al. (2020) 'How to deal with COVID-19 epidemic-related lockdown physical inactivity and sedentary increase in youth? Adaptation of Anses' benchmarks', Archives of Public Health, 78(1), p. 52. doi: 10.1186/s13690-020-00432-z.

Ministry of Health-RI (2023) Diabetes Melitus Pada Anak.

Ministry of Health - RI (2018) 'Laporan Nasional Riskesdas 2018', Badan Penelitian dan Pengembangan Kesehatan, p. 198.

Neshteruk, C. D. et al. (2020) 'Identifying patterns of physical activity and screen time parenting practices and associations with preschool children's physical activity and adiposity', Preventive Medicine Reports, 18(February), p. 101068. doi: 10.1016/j.pmedr.2020.101068.

Nurwitanti, H. A. (2019) *Determinan Sedentary Lifestyle Berdasarkan Family Ecological Model Pada Anak Usia Sekolah Di Sdn Penjaringansari*. Universitas Airlangga.

Penelitian, B. (2013) 'Riset kesehatan dasar', Jakarta: kementerian kesehatan RI.

Pietrobelli, A. et al. (2020) 'Effects of COVID-19 Lockdown on Lifestyle Behaviors in Children with Obesity Living in Verona, Italy: A Longitudinal Study', Obesity, 28(8), pp. 1382–1385. doi: 10.1002/oby.22861.

Rhodes, R. E. et al. (2019) 'Parental support of the Canadian 24-hour movement guidelines for children and youth: prevalence and correlates', BMC Public Health, 19(1), p. 1385. doi: 10.1186/s12889-019-7744-7.

Rhodes, R. E. et al. (2020) 'Development of a consensus statement on the role of the family in the physical activity, sedentary, and sleep behaviours of children and youth', International Journal of Behavioral Nutrition and Physical Activity, 17(1), p. 74. doi: 10.1186/s12966-020-00973-0.

Souza, A. A. et al. (2022) 'Movement behaviors in short versus adequate nocturnal sleepers: A compositional analysis of preschoolers', American Journal of Human Biology, 34(5). doi: 10.1002/ajhb.23694.

Ulfiana, E., Rachmawati, P. D. and Fadhilah, D. K. (2019) 'Contributing factors of the mother's behavior in fulfilling nutritional needs for under-five children with overweight and obesity', *Indian Journal of Public Health Research and Development*. Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia: Indian Journal of Public Health Research and Development, 10(8), pp. 2713–2718. doi: 10.5958/0976-5506.2019.02280.0.

Vaughn, A. E., Hales, D. and Ward, D. S. (2013) 'Measuring the physical activity practices used by parents of preschool children', Medicine and Science in Sports and Exercise, 45(12), pp. 2369–2377. doi: 10.1249/MSS.0b013e31829d27de.

WHO (2019) Guidelines on physical activity, sedentary behaviour and sleep for children under 5 years of age. Geneva PP - Geneva: World Health Organization.

WHO (2020) *WHO Guidelines on physical activity and sedentary behaviour*, *Routledge Handbook of Youth Sport*.

Williams, S. M. et al. (2014) 'Do More Active Children Sleep More? A Repeated Cross-Sectional Analysis Using Accelerometry', PLOS ONE, 9(4), p. e93117.

Al Yazeedi, B. et al. (2021) 'Family Influence on Children's Nutrition and Physical Activity Patterns in Oman', Journal of Pediatric Nursing, 56, pp. e42–e48. doi: https://doi.org/10.1016/j.pedn.2020.07.012.

Yuarnistira et al. (2019) 'Factors Influencing the Feeding Pattern of Under-Five Children in Coastal Areas', IOP Conference Series: Earth and Environmental Science, 246, p. 012008. doi: 10.1088/1755-1315/246/1/012008.

Zhang, J. et al. (2010) 'Roles of Parental Sleep/Wake Patterns, Socioeconomic Status, and Daytime Activities in the Sleep/Wake Patterns of Children', The Journal of Pediatrics, 156(4), pp. 606-612.e5. doi: https://doi.org/10.1016/j.jpeds.2009.10.036.

How to cite this article: Rachmawati, P. D., Krisnana, I., Pradanie, R., Qur'aniati, N., Arief, Y. S., Biru, M. M. D. T., Asih, M. N., Rithpho, P., and Kurnia, I. D. (2024) 'Parental Support And Influencing Factors For School-Age Children's Healthy Movement Behavior: A Cross-Sectional Study', Jurnal Ners, 19(4), pp. 500-508. doi: http://dx.doi.org/10.20473/jn.v19i4.57686